

Appl. No. 10/648,523
Amdt. dated May 10, 2005
Reply to Office action of Feb. 10, 2005

Amendments to the Specification:

Please replace the title with the following amended title:

~~--LIGHT GUIDE PLATE WITH LIGHT REFLECTION PATTERN AND METHOD OF
FABRICATING THE SAME~~

Please replace the paragraph extending from page 6, lines 7-18 with the following amended paragraph:

-- In this embodiment, for example, the body 710 has a hexahedral shape including first and second surfaces 714, 716 facing each other and a side surface or light incident surface 712 on which externally applied light is incident. The light applied onto the light incident surface 712 travels in the body 710 and exits mainly through the first and second surfaces 714, 716 which may be or not be parallel with each other. The light has various traveling paths in the body 710, each of which ends up with exiting through the first or second surface 714, 716 upon satisfying the conditions of the Snell's law of light refraction. The light exiting through the first or second surface 714, 716 may have various angles with respect to corresponding one of the first and second surfaces 714, 716. For example, the light exits the light guide plate 700 at an emission angle θ_1 with respect to the first or second surface 714, 716. The light emission angle θ_1 is one of the factors determining efficiency of the light guided by the light guide plate 700.--

Please replace the paragraph extending from page 10, lines 3-12 with the following amended paragraph:

-- The light guide plate 700 also has a light reflection pattern 720 for adjusting the light paths in the body 710 and the light emission angle. In other words, the light reflection pattern 720 is designed to reflect the light from the light incident surface 712, and the reflected light exits the second surface 716 at an emission angle larger than the emission angle θ_1 . Assuming that a light guide plate has no such light reflection pattern 720 and a display panel is disposed over the second surface 716, there is inevitable loss of light exiting the first surface

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which has no use for the display. In the present invention, since the light guide plate 700 has the light reflection pattern 720 with functions of reflecting the light as well as adjusting the light paths, light efficiency of a display apparatus employing the light guide plate 700 advantageously increases.--

Please replace the paragraph extending from page 10, lines 13-17 with the following amended paragraph:

-- In this embodiment, as shown in Fig. 1, the light reflection pattern 720 has a shape of prism dots 721 formed on the first surface 714. It should be noted that a display panel (not shown) is assumed to be disposed at the side of the second surface 716. In like manner, assuming that a display panel is disposed at the side of the first surface 714, the light reflection pattern 720 would be formed on the second surface 716.--

Please replace the paragraph extending from page 14, lines 6-15 with the following amended paragraph:

-- Fig. 6 is a schematic diagram illustrating a light reflection pattern according to an exemplary embodiment of the present invention. In the light reflection pattern 726, the alignment direction of the light reflecting surfaces 725 and the incident direction of the light incident onto the light incident surface 712 are factors of determining luminance at a display panel. The luminance increases in case that the light is incident on the light incident surface 712 in X-direction and the light reflecting surfaces 725 are elongated and aligned in Y-direction. In other words, when the light reflection pattern 726 has prism dots with the light reflecting surfaces 725 aligned in a direction substantially perpendicular to a direction of the light provided to the light incident surface 712, the luminance increases at a display panel receiving the light from the light guide plate 700 with the light reflection pattern 726.--

Please replace the paragraph extending from page 14, line 15 to page 15, line 2 with the following amended paragraph:

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-- Fig. 7 is a schematic diagram illustrating paths of light traveling in the light guide plate body 710. The light incident on the side-light incident surface 712 reflects from the first and second surfaces 714, 716 and the multiple side surfaces including the light incident surface 712 so that the light has various traveling paths in the body 710. Of the various light paths, some of them do not arrive on a prism dot so that there would be light not reflected by the prism dots to the second surface 716. Such light not reflected by the prism dots results in a loss of the light, which causes a decrease in the luminance at a display panel. Such loss of light may be prevented by employing the light guide plate having the light reflection pattern 726 with light reflecting surfaces 725 aligned in a direction parallel with the light incident surface 712.--

Please replace the paragraph extending from page 16, lines 4-17 with the following amended paragraph:

-- Fig. 9 is a schematic diagram illustrating a light reflection pattern according to another embodiment of the present invention. The light reflection pattern 729 also has two types of patterns including the first light reflection pattern 620, and a third light reflection pattern 632. The first light reflection pattern 620 is the same as in the embodiment of Fig. 8. That is, the first light reflection pattern 620 has the light reflecting surfaces 625 aligned parallel to the light incident surface 712. The ~~second-third~~ light reflection pattern 632 of this embodiment includes prism dots having light reflecting surfaces 637 elongated and aligned substantially perpendicular to the light incident surface 712. In other words, the light reflecting surfaces 637 of the ~~second~~ third light reflection pattern 632 are aligned in X-direction while the light reflecting surfaces 625 of the first light reflection pattern 620 are aligned in Y-direction. Thus, the alignment directions of the light reflecting surfaces 625, 637 of the first and ~~second-third~~ light reflection patterns 620, 632 are substantially perpendicular to each other. This provides similar effects as if employing two prism sheets arranged such that prisms of the respective prism sheets are perpendicular to each other.--

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Please replace the paragraph extending from page 16, line 17 to page 17, line 2 with the following amended paragraph:

-- In this embodiment, the prism dots of the first light reflection pattern 620 are arranged in a matrix form, and the prism dots of the ~~second~~third light reflection pattern 632 are each interposed between adjacent prism dots of the first light reflection pattern 620. The prism dots of the first and ~~second~~third light reflection patterns 620, 632 may have a substantially identical size or different sizes. For example, the prism dots of the ~~second~~third light reflection pattern 632 are smaller than those of the first light reflection pattern 620, as shown in Fig. 9.--

Please replace the paragraph extending from page 20, lines 13-17 with the following amended paragraph:

-- Fig. 13D shows a process of filling the openings 761b with the UV curable material 762. A scraper ~~763-759~~ is used to spread the disposed UV curable material 762 to fill the openings 761b with the discretely formed UV curable material 762a. The scraper ~~763-759~~ moves along the top surface of the pattern mask 761 so that the UV curable material 762a filled in the openings are leveled with the top surface of the ~~pattern-mask~~ body 761a.--

Please replace the paragraph extending from page 22, line 18 to page 23, line 2 with the following amended paragraph:

-- The roller 775a is made of, for example, elastic material and has ~~multiple-prism pattern~~ recesses 775f each having a prism-shaped bottom. In other words, each of the prism pattern recesses 775f has on its bottom a prism pattern containing one or more prisms. Each prism of the prism pattern formed on the prism pattern recesses 775f has side surfaces elongated and aligned in a selected direction. These side surfaces of the prisms are formed corresponding to the light reflecting surfaces of the prism dots of the light reflection pattern (referring to Figs. 1 and 3-5).--